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United States
Department of
Agriculture

Food and
Nutrition
Service

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SUBJECT: 2012 State-Level Estimates of Infants and Pre-School-Age Children at or Below 185 Percent of Poverty

TO: Debra Whitford
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Attached are estimates of the number of infants and children (ages 1-4) in each State who were at or below 185 percent of poverty in 2012. The 2012 estimates are provided for use in the Women, Infants and Children (WIC) funding formula to determine States' fair shares of WIC food funds for fiscal year (FY) 2015. The 2012 estimates are recommended for use in FY 2015 funding allocations because they reflect the most recent data available. These estimates were primarily developed using a "shrinkage" methodology similar to that used to develop estimates used in the funding formula since FY 1995. Estimates for Puerto Rico were based on the 2012 Puerto Rico Community Survey. Estimates for the other territories were based on data from the 2010 Census. (Note: the estimates for the States presented in this memo were produced using the Food and Nutrition Service's (FNS) historic shrinkage methodology for use in the funding formula. These estimates are not comparable to the more comprehensive eligibles estimates produced by the Urban Institute under contract with FNS and published on the FNS website in March 2014.)

Nationwide, the estimated number of infants and children (ages 1-4) at or below 185 percent of poverty decreased by 2.9 percent from 2011 to 2012. Some of this decrease is due to more accurate population estimates resulting from the release of the 2010 decennial Census (particularly due to decreases of between 30% and 40% in the number of WIC-eligible infants and children in the territories as a result of updated Census estimates in the territories), but the decrease may also reflect an improving American economy. The State-level estimates provided here are consistent with the national number of infants and children at or below 185 percent of poverty. Because the 2012 data will be updating 2011 data for funding formula purposes, comparisons are shown between these two years.

Attached is a brief summary of the estimates and the shrinkage methodology used to develop them. We recommend releasing these materials to the States and other interested organizations on request.

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Attachments

2012 STATE-LEVEL ESTIMATES OF INFANTS AND CHILDREN (AGES 1-4) AT OR BELOW 185 PERCENT OF POVERTY

Overview

Prior to Fiscal Year (FY) 1995, estimates of the number of infants and children (ages 1-4) at or below 185 percent of poverty were available for Census years only. For the FY 1995-2015 funding allocations, annual estimates have been developed using a statistical technique known as "shrinkage."

Shrinkage is a statistical approach, which combines information from survey samples with other data. For the State estimates of the number of infants and children at or below 185 percent of poverty, shrinkage is used to combine income data from the March Current Population Survey (CPS) with an estimation model that uses other State-level economic data that have been demonstrated to have value in predicting the prevalence of low-income infants and children.

Food Nutrition Service (FNS) has used this methodology to develop State-level estimates of infants and children at or below 185 percent of poverty for 1992-2011. We have now produced estimates for 2012.

Since the territories are not included in the CPS, FNS estimates assume that the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands have the same share of the number of infants and children at or below 185 percent of poverty that they did in 2010. The 2012 estimates are the first year that these estimates are based on the 2010 Census.¹ As described in a memo sent to the WIC division in February 2014, because of the change in Census counts in the territories between 2000 and 2010, we now estimate that there are between 30% and 40% fewer WIC-eligible infants and children in the territories than previously estimated.

In addition, due to changes in the way that the Census Bureau has collected data since the 2000 Census, the number of WIC-eligible infants and children in Puerto Rico can no longer be estimated with the same methodology as the other territories, but thanks to the advent of the Puerto Rico Community Survey (PRCS) in 2005, we can directly estimate the number of WIC-eligible infants and children in Puerto Rico in 2012. However, we note that this change means that the Puerto Rico estimates are now calculated with a different methodology than either the States or the other territories.

As the most current data, the 2012 estimates should be used for funding allocations for FY 2015.

¹ For the island territories, the Census Bureau provided the number of infants and children at or below 185 percent of poverty.

Results

For 2012, the total number of infants and children at or below 185 percent of poverty in the United States, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands was estimated to be 8.9 million. Table 1 provides estimates of the number of infants and children at or below 185 percent of poverty in 2012 in each State and territory and the national totals. Also shown are the 2011 shrinkage estimates.

Use of the Estimates in the Funding Formula

State-level estimates of infants and children at or below 185 percent of poverty are used in the funding formula to determine each State's share of the national total of infants and children at or below 185 percent of poverty. This percentage share is used to determine a State's "fair share" of food funds. For example, for a State with 1 percent of the national total of infants and children at or below 185 percent of poverty, the fair share would be 1 percent of the total food funds.

Estimates of pregnant, postpartum and breastfeeding women at or below 185 percent of poverty are not used in determining fair share for the allocation process. Women are estimated as a direct constant function of the number of infants at or below 185 percent of poverty. As a result, inclusion of estimates of women would have no significant impact on the percentage distribution of people at or below 185 percent of poverty among States. Therefore, for simplicity, estimates of pregnant, postpartum, and breastfeeding women are not included in the calculation.

Shrinkage Methodology for Estimates of the Number of Infants and Children at or Below 185 Percent of Poverty

For the estimates, shrinkage is used to develop estimates of the proportion of infants and children in each State in households with incomes at or below 185 percent of poverty. These proportions are then applied to State population estimates of infants and children by single age category.

These estimates were derived using an empirical Bayes shrinkage estimator. The estimator used Current Population Survey Annual Social and Economic Supplement (CPS ASEC) data pertaining to 2007 to 2012, American Community Survey (ACS) three-year estimates for 2005–2007 to 2010–2012, and administrative data from individual income tax returns and population estimates pertaining to 2007 to 2012 for all the States to jointly derive estimates 2007 to 2012 for each State. Estimates for six years are jointly derived because of the availability of six sets of ACS three-year estimates.

The data from the econometric model provides more information to use in developing an estimate. The "shrinkage" estimate that results from the combination of the CPS with these additional data provides an estimate that is more precise than the CPS sample estimates taken alone. The shrinkage technique averages the sample and the model estimates using

weights that reflect the relative precision of each estimate.² Thus, in cases where the CPS estimate has a high standard error, the model estimate would tend to receive more weight than it does in cases where the CPS standard error is lower.

2012 Estimates

The model estimates were developed using a regression model, which estimates the proportion of infants and children at or below 185 percent of poverty. As in prior years, the regression model for 2012 incorporates both Census and individual income tax data.

The following five steps were used to derive the 2012 State WIC eligibles estimates:

1. From the CPS ASEC surveys for 2008-2013, we used the income data collected for each of the six calendar years 2007-2012 to obtain for those years direct sample estimates of the percentage of children ages 0 to 4 in families with incomes at or below 185 percent of poverty in each State.
2. Using a regression model, we predicted State eligibility percentages (the percentage of children ages 0 to 4 who are in families with incomes at or below 185 percent of poverty) for each of the six years (2007-2012) based on administrative and decennial census data. (The predictors used are listed below.)
3. Using shrinkage methods, we averaged the direct sample estimates and regression predictions to obtain preliminary shrinkage estimates of State eligibility percentages.
4. For each State, we multiplied the preliminary shrinkage eligibility percentages by (separately) the State populations of children ages 0 and ages 1 to 4 to obtain preliminary shrinkage estimates of the numbers of infants and of children who are income-eligible for WIC.
5. We ratio adjusted the preliminary State shrinkage estimates of the numbers eligible to derive final shrinkage estimates that sum to the national total for children ages 0 to 4 obtained directly from the CPS.

The regression model used to predict eligibility percentages had the following predictors (in addition to an intercept):

- the elderly non-filer rate—the percentage of elderly individuals who were not claimed on tax returns—according to individual income tax data and population estimates
- the percentage of households with a female householder, no husband present, and related children under 18 years according to ACS three-year estimates
- the percentage of individuals with household income under 200 percent of the federal poverty level according to ACS three-year estimates
- median adjusted gross income according to individual income tax data
- the percentage of individuals who are not U.S. citizens according to ACS three-year estimates, and
- the percentage of households with earnings according to ACS three-year estimates
- the percentage of adults with household income under 125 percent of the federal poverty level according to ACS three-year estimates

² Specifically, the weights are chosen to minimize mean squared error (MSE).

- the percentage of occupied housing units that are owner-occupied according to ACS three-year estimates

The predictors all varied by year. For example, the 2012 estimates were based on tax return data and population estimates for 2012 and the 2010–2012 ACS three-year estimates.

TABLE 1
STATE-LEVEL ESTIMATES OF INFANTS AND CHILDREN AT OR BELOW 185% OF POVERTY, 2011 AND 2012

	2011	2011	2011	2012	2012	2012
State	Infants	Children (ages 1-4)	Infants + Children (ages 1-4)	Infants	Children (ages 1-4)	Infants + Children (ages 1-4)
Alabama	30,915	122,941	153,856	27,163	111,513	138,676
Alaska	4,381	16,310	20,691	5,083	19,769	24,852
Arizona	42,388	182,921	225,309	38,340	159,131	197,471
Arkansas	20,316	84,646	104,962	21,163	85,091	106,254
California	236,132	923,406	1,159,538	235,100	956,127	1,191,227
Colorado	23,187	97,933	121,120	19,754	82,258	102,012
Connecticut	10,792	46,232	57,024	8,725	36,742	45,467
Delaware	4,522	17,546	22,068	4,822	19,217	24,039
District of Columbia	3,330	10,040	13,370	3,984	13,303	17,287
Florida	108,323	439,488	547,811	100,865	403,236	504,101
Georgia	61,989	260,047	322,036	64,546	264,173	328,719
Hawaii	7,541	28,616	36,157	8,422	32,811	41,233
Idaho	11,549	50,172	61,721	10,588	45,461	56,049
Illinois	70,483	284,197	354,680	61,671	253,086	314,757
Indiana	39,965	163,986	203,951	40,794	167,029	207,823
Iowa	14,062	60,147	74,209	12,875	52,878	65,753
Kansas	18,035	72,355	90,390	17,532	72,315	89,847
Kentucky	28,705	115,613	144,318	25,854	105,171	131,025
Louisiana	30,695	122,830	153,525	30,335	124,013	154,348
Maine	5,404	22,786	28,190	5,063	21,106	26,169
Maryland	19,137	77,141	96,278	22,159	89,343	111,502
Massachusetts	22,441	89,456	111,897	23,188	93,050	116,238
Michigan	52,341	217,073	269,414	43,458	178,668	222,126
Minnesota	20,872	87,314	108,186	18,335	75,048	93,383
Mississippi	22,022	95,097	117,119	21,557	89,054	110,611
Missouri	33,410	139,274	172,684	33,999	138,582	172,581
Montana	5,423	22,865	28,288	4,789	19,448	24,237
Nebraska	9,768	38,933	48,701	10,263	41,854	52,117
Nevada	16,715	68,728	85,443	19,842	83,133	102,975
New Hampshire	3,265	13,906	17,171	3,837	15,972	19,809
New Jersey	32,182	135,609	167,791	34,002	138,069	172,071
New Mexico	15,769	63,971	79,740	13,667	57,483	71,150
New York	102,311	386,518	488,829	115,635	451,196	566,831
North Carolina	56,801	241,117	297,918	56,298	234,025	290,323
North Dakota	2,848	11,270	14,118	3,219	12,202	15,421
Ohio	60,636	256,355	316,991	57,237	235,168	292,405
Oklahoma	23,966	102,134	126,100	26,418	107,512	133,930
Oregon	20,815	88,296	109,111	19,466	80,618	100,084
Pennsylvania	59,827	242,155	301,982	56,850	230,367	287,217
Rhode Island	4,430	18,378	22,808	5,167	20,945	26,112
South Carolina	30,382	129,458	159,840	28,707	118,630	147,337
South Dakota	5,434	22,238	27,672	5,240	21,005	26,245
Tennessee	37,735	154,307	192,042	39,543	160,269	199,812
Texas	188,813	776,874	965,687	192,930	791,430	984,360
Utah	19,228	80,871	100,099	18,551	76,868	95,419
Vermont	2,316	9,657	11,973	2,195	8,928	11,123
Virginia	30,148	121,497	151,645	30,127	120,212	150,339
Washington	34,311	140,819	175,130	33,839	137,047	170,886
West Virginia	11,037	44,837	55,874	8,424	33,897	42,321
Wisconsin	27,168	112,187	139,355	26,920	111,471	138,391
Wyoming	2,598	11,417	14,015	2,564	10,784	13,348
United States	1,746,863	7,121,964	8,868,827	1,721,105	7,006,708	8,727,813
Puerto Rico	55,732	227,221	282,954	29,455	140,160	169,615
Virgin Islands	1,389	5,666	7,055	866	3,183	4,049
Guam	2,230	9,095	11,325	1,553	6,076	7,628
American Samoa	1,732	7,060	8,791	1,159	4,046	5,205
CNMI	1,120	3,925	5,045	746	2,752	3,498
Total- US + territories	1,809,067	7,374,931	9,183,997	1,754,883	7,162,925	8,917,808